



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/801,918	03/16/2004	Hernan Altman	132733	3090

7590 03/28/2005

Dean D. Small
Armstrong Teasdale LLP
Suite 2600
One Metropolitan Square
St. Louis, MO 63102

EXAMINER

KEANEY, ELIZABETH MARIE

ART UNIT	PAPER NUMBER
----------	--------------

2882

DATE MAILED: 03/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

H.A

Office Action Summary

Application No.

10/801,918

Applicant(s)

ALTMAN, HERNAN

Examiner

Elizabeth Keaney

Art Unit

2882

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-29 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 March 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>3/16/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "pair of photon detectors using a SPECT modality" and the "pair of detectors inclined at an angle" must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

Claims 6 and 18 are objected to under 37 CFR 1.75(c), as being of proper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Regarding claim 6, lines 2-3 include the limitation of "rotating the gantry approximately one hundred and eighty degrees plus the fan angle". This removes the limitation found in claim 5 which recites "rotating the gantry less than one hundred and eighty degrees". Regarding claim 18, it merely repeats the CZT detector limitation and adds nothing further to the claim.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-7, 11-12, 14-18 and 24-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nafstadius (US Patent 6,865,254) in view of Chao (US Patent 6,052,433).

Re claim 1: Nafstadius discloses, in figure 4 and throughout the disclosure, a method of examining a patient, the method comprising:

- aligning a patient table in an opening of a gantry that includes a multi-energy detector (30) and an x-ray source (8);

- imaging a patient utilizing a first imaging modality (9) during a first portion of a scan using the multi-energy detector;
- imaging a patient utilizing a second imaging modality (10) during a second portion of the scan using the multi-energy detector wherein the second imaging modality is different than the first imaging modality.

However, Nafstadius fails to teach or fairly suggest the multi-energy detector to be a CZT detector.

Chao discloses the use of a CZT detector within a multi-energy x-ray source system (column 5, line 21).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute a CZT detector for the multi-energy detector of Nafstadius because it improves the contrast and clarity of the image produced from the impinged photons.

Re claims 2,14 and 18: Nafstadius discloses, in figure 14 and throughout the disclosure, a patient table (20) in an opening of a gantry (4,5) comprising aligning a patient table in an opening of a C-arm unit (207).

Re claims 3,24 and 25: Nafstadius discloses moving the patient table along at least one of a patient table orthogonal axis when imaging the patient utilizing at least

one of the first imaging modality and the second imaging modality (column 8, lines 19-20).

Re claim 4: Nafstadius discloses rotating the gantry around a longitudinal axis of the patient table when imaging the patient utilizing at least one of the first imaging modality and the second imaging modality (column 8, lines 18-19).

Re claim 5: Nafstadius discloses the x-ray source configured to emit x-rays in a beam having a predetermined fan angle, the method further comprising rotating the gantry around the longitudinal axis of the patient table less than one hundred and eighty degrees of rotation when imaging the patient utilizing at least one of the first imaging modality and the second imaging modality (column 8, lines 15-17).

Re claims 6 and 16: Nafstadius discloses rotating the gantry around a longitudinal axis of the patient table approximately one hundred and eighty degrees plus the fan angle of rotation when imaging the patient utilizing at least one of the first imaging modality and the second imaging modality (column 8, lines 20-22).

Re claim 7: Nafstadius discloses moving at least one of the detector and the patient table to follow a contour of the patient during at least a portion of the scan (column 8, lines 19-20).

Re claim 11: Nafstadius discloses imaging a patient using utilizing a first imaging modality comprises imaging the patient using a CT modality (column 8, line 9).

Re claims 12 and 17: Nafstadius discloses imaging the patient using a CT modality comprising imaging the patient using a cone-beam CT modality (column 8, lines 30-31).

Re claim 15: Nafstadius discloses, in figure 14 and throughout the disclosure, the gantry (4,5) being rotatably coupled to a gantry holder (6,7).

Re claim 26: Nafstadius discloses an imaging isocentric area (13) located between the x-ray source (8) and the detector, the imaging isocentric area remaining substantially constant when the gantry moves along the image acquisition path.

Claims 8-10 and 19-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nafstadius and Chao as applied to claim 1 above, and further in view of Natterer et al. (US Patent 6,631,285; hereinafter Natterer).

Re claim 8: Nafstadius and Chao show all the limitations as shown above.

However, they fail to teach or fairly suggest the system to be used for nuclear medicine imaging.

Natterer discloses an x-ray imaging apparatus wherein the patient includes a radiopharmaceutical (column 1, line 19) and wherein imaging the patient utilizing a first

Art Unit: 2882

image modality comprises imaging the patient using a nuclear medicine modality (column 2, line 36).

It would have been obvious to one of ordinary skill in the art to introduce radiopharmaceuticals into the patient to perform nuclear imaging because it allows for better imaging of organs such that the images are produced that are clear enough to evaluate.

Re claim 9: Natterer discloses the imaging the patient using a nuclear medicine modality comprising imaging the patient using SPECT (column 1, line 28).

Re claim 10: Natterer discloses, in figure 1 and throughout the disclosure, imaging the patient using a nuclear medicine modality comprising imaging the patient using a pair (16(1), 16(2)) of photon detectors using a SPECT modality.

Re claim 19: Natterer discloses, in figure 1 and throughout the disclosure, the detector comprising a pair of detectors (16(1), 16(2)) inclined at an angle with respect to each other.

Re claim 20: Natterer discloses, in figure 1 and throughout the disclosure, the pair of detectors inclined at an angle of approximately ninety degrees with respect to each other.

Re claim 21: Nafstadius and Chao disclose at least one detector to be a CZT detector.

Re claim 22: Natterer discloses, in figure 1 and throughout the disclosure, at least one of the pair of detectors is positioned substantially perpendicularly opposed to the x-ray source (16(2)).

Re claim 23: Nafstadius and Chao discloses at least one of the pair of detectors that is positioned substantially perpendicularly opposed to the x-ray source to be a CZT detector.

Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nafstadius and Chao as applied to claim 1 above, and further in view of Flohr et al. (US Patent 6,504,893; hereinafter Flohr).

Nafstadius and Chao show all the limitations as shown above.

However, they fail to teach or fairly suggest monitoring a cyclic physiological function within the patient; and triggering at least one of a first modality and the second modality during at least one pre-selected portion of the cyclical physiological function.

Flohr discloses a CT imaging system that comprising a cyclic physiological function within the patient; and triggering at least one of a first modality and the second modality during at least one pre-selected portion of the cyclical physiological function (abstract, lines 6-7).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to include a triggering mechanism within the system disclosed in Nafstadius and Chao because it allows for a clearer image of a moving target (i.e. the heart) thereby eliminating a blurred image.

Claims 27-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nafstadius and Chao as applied to claim 1 above, and further in view of Ivan et al. (US Patent 6,364,526; hereinafter Ivan).

Re claim 27: Nafstadius and Chao show all the limitations as shown above.

However, they fail to teach or fairly suggest an imaging system comprising a gantry support base wherein the support base is coupled to a rail system, the rail system operable to move the gantry unit along at least one axes.

Ivan discloses, in figure 9 and throughout the disclosure, a CT imaging system, wherein the gantry support base wherein the support base is coupled to a rail system (92), the rail system operable to move the gantry unit along at least one axes.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to include a rail system within the imaging system of Nafstadius and Chao because it increases the range of movement of the entire machine thereby allowing for better adjustment for each individual patient.

Re claim 28: Ivan discloses the rail system being coupled to at least one of a floor, ceiling, and a wall of an examination room (column 8, line 33).

Re claim 29: Ivan discloses, in figure 20, the imaging system comprising a gantry support base (44) wherein the gantry support base is a mobile support base.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elizabeth Keaney whose telephone number is (571)272-2489. The examiner can normally be reached on Monday-Thursday 5:30-4.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ed Glick can be reached on (571)272-2490. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


emk


EDWARD J. GLICK
SUPERVISORY PATENT EXAMINER